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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,201	02/07/2002	Hironuki Otaki	TJK/213	3764

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EXAMINER

ANGEBRANDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,201

Applicant(s)

OTAKI ET AL.

Examiner

Martin J Angebranndt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 36,37,39 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 and 38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-40 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The response provided by the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed.

2. Newly submitted claims 36,37,39 and 40 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: These composition may be used to form other articles than holograms

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 36,37,39 and 40 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 29-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 29, it is not clear if both a carboxyl and hydroxyl groups must be present or if only one need be present.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Nakamura et al. JP 05-346662.

Nakamura et al. JP 05-346662 (machine translation attached) teaches in example 1 [0132-0137] a photosensitive layer comprising a methacrylic acid/ allyl copolymer, a monomer, a silane coupling agent and a photoinitiator. Example 2 [0156-0164] a photosensitive layer comprising a methacrylic acid/ allyl copolymer, a monomer, a silane coupling agent and a two photoinitiators. The examiner holds that photoinitiator c also acts as a sensitizing dye as it is a benzothiazole cyanine dye. Please note that these are not the toner layers/materials, but the photosensitive layer. The use of various spectral sensitizing agents including cyanine dyes is disclosed. [0039].

The carbonyl moieties of the binder are inherently held to chelate at least some of the silane coupling agent.

The examiner notes that claim 33 does not require that the metal be the metal particles set forth in section [0151-0154] of the prepub of the instant application, that the Mw of the binder be

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within a particular range or that it be a particular composition (ie an epoxy). Therefore the argued position is not commensurate with the scope of coverage sought.

8. Claims 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Sashida et al. '451.

Sashida et al. '451 describes in comparative examples 1 and 4, polymers having a number average MW of 8,000 or 6,000 daltons, Michler's ketone (photoinitiator), trimethoxysilylpropyl methacrylate (silane coupling agent) and diethylene glycol dimethacrylate as the monomer. (columns 9-11).

The carbonyl moieties of the binder are inherently held to chelate at least some of the silane coupling agent.

The examiner notes that claim 33 does not require that the metal be the metal particles set forth in section [0151-0154] of the prepub of the instant application, that the Mw of the binder be within a particular range or that it be a particular composition (ie an epoxy). Therefore the argued position is not commensurate with the scope of coverage sought.

9. Claims 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Kikuchi JP 63-264686.

Kikuchi JP 63-264686 in examples 1 uses 40 parts methacrylic/styrene/maleic anhydride polymer, 20 parts of a trimethylolpropyltriacylate monomer, 10 parts of a pigment, 0.5 parts of a silane coupling agent and 10 parts of a hydroxyethyl acrylate monomer coated on a substrate. (page 6/upper right hand column). Example 2, uses an aluminum coupling agent (page 6/lower right hand column). Example 3 (upper left column on page 7) uses a titanium coupling agent.

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The carbonyl moieties of the binder are inherently held to chelate at least some of the silane coupling agent.

See the response above as no other arguments are directed at this rejection.

10. Claims 33-35 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al. '340.

Kawabata et al. '340 teach holographic recording compositions which include both cationically and free-radically polymerizable materials and are spin coated on a glass substrate. (see examples). The use of various additives including silane coupling agents is disclosed. (6/21). The use of cationically curable materials, such as the polyfunctional **monomer disclosed at col 3/line 60- col. 4/line 3 is disclosed.**

It would have been obvious to one skilled in the art to modify the examples by using other disclosed monomers, such as the polyfunctional monomer disclosed at col 3/line 60- col. 4/line 3 together with useful additives, such as the silane coupling agent would have been obvious and leads one to a reasonable expectation of success based upon the disclosed equivalent function and the increased adhesion to glass substrate being known as a result of adding coupling agents. The examiner holds that the language describing the binder includes higher MW epoxide monomers. The carbonyl moieties of the binder are inherently held to chelate at least some of the silane coupling agent.

See the response above as no other arguments are directed at this rejection.

11. Claims 25-35 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al. '340, in view of Kojima et al. '968 and Kikuchi JP 63-264686.

Kojima et al. '968 establishes that silane coupling agents are known for their adhesion to glass substrates. (4/27-49)

In addition to the basis provided above, the examiner has cited Kojima et al. '968 to support the position that the resulting increased adhesion to the glass substrate due to the addition of a silane coupling agent is old and well known in the art and Kikuchi JP 63-264686 which teaches the equivalence of various coupling agents and holds that it would have been obvious to one skilled in the art to add the Ti or silane coupling agent to gain increased adhesion of the polymerizable composition to the glass substrate used in the examples of Kawabata et al. '340.

The addition of Kikuchi JP 63-264686 to the rejection addresses the arguments raised by the applicant with respect to the added limitations.

12. Claims 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by JP 06-161095 (machine translation attached).

See examples cited in abstract [0022-0023 in machine translation]. The examiner considered the light metal salt of the olefin maleic acid polymer to meet the binder requirements of the claims.

See the response above as no other arguments are directed at this rejection.

13. Claims 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by JP 2000-273418.

See example 1 in machine translation. The carbonyl moieties of the binder are inherently held to chelate at least some of the silane coupling agent.

See the response above as no other arguments are directed at this rejection.

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14. Claims 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by JP 10-338850.

See example 1 in machine translation. The examiner holds that the language describing the binder includes higher MW epoxide (Epicoat 828) resin with the cationic initiator and are held to chelate the silane.

See the response above as no other arguments are directed at this rejection.

15. Claims 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Mochel et al. '297.

See example (13/67-14/29, making polymer and 14/30-46, adding monomer, benzoin photoinitiator and aluminum chelating agent). The carbonyl moieties of the binder are inherently held to chelate at least some of the aluminum coupling agent.

See the response above as no other arguments are directed at this rejection.

16. Claims 33-34 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Proskow '608.

See example 4, formulation A, which uses the Hycar CTBNW which has a Mw of 3,400. The carbonyl moieties of the binder are inherently held to chelate at least some of the zinc coupling agent.

See the response above as no other arguments are directed at this rejection.

17. Claim 35 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Asai et al. '671.

See comparative example 1 which includes an acrylate epoxy with a Mw of 2,500, a monomer and a photoinitiator. (24/22-47)

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This is a new rejection.

18. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. '771, in view of Sato et al. '846, Baney et al., "Silsesquioxanes" Chem. Rev. vol 95(5) pp. 1409-1430 and Krug et al., "Fine Patterning of Thin Sol-gel Films", J. non-cryst. Sol. Vol. 147/148 pp. 447-450, (1992).

Maeda et al. '771 teach the use of solgel processing to form useful holographic recording media, where a sol-gel processing is used to form a matrix in situ and mixed with photopolymerizable materials.

Sato et al. '846 teach the use of silicon containing monomeric compounds in holographic recording media, specifically those which contain both free radically and cationically polymerizable materials. (see examples) Useful silicon containing cationically curable compounds are disclosed (3/48-4/4). The use of cationically reactive binders is disclosed. (7/15-24). The use of silane coupling agents is also disclosed. (7/11)

Baney et al., "Silsesquioxanes" Chem. Rev. vol 95(5) pp. 1409-1430 describes various techniques for forming organic/inorganic hybrid, including those containing moieties which may be photocured, such as epoxides and vinyl moieties. (page 1426, section VB, right column)

Krug et al., "Fine Patterning of Thin Sol-gel Films", J. non-cryst. Sol. Vol. 147/148 pp. 447-450, (1992) teaches the method for forming photocurable solo-gel polymers where methacrylate monomers are reacted with alkoxides and then with other monomers.

It would have been obvious to modify the process of Maeda et al. '771 by using producing a reactive sol-gel matrix containing epoxide moieties based upon the disclosure within Sato et al. '846 that these would be compatible and that epoxide containing reactive binder are

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desirable in holographic recording media, using technique similar to those disclosed by Baney et al., "Silsesquioxanes" Chem. Rev. vol 95(5) pp. 1409-1430 and Krug et al., "Fine Patterning of Thin Sol-gel Films", J. non-cryst. Sol. Vol. 147/148 pp. 447-450, (1992) to form the epoxide containing polymerizable matrix with a reasonable expectation of forming a useful holographic recording medium.

The applicant argues that the refractive index modulation is through the organic-inorganic hybrid polymer and argues that the resultant polymer of the invention has the desired flexibility, rigidity and heat resistance. The examiner notes that none of these properties are recited and that the use of sol-gel processes to form a more rigid matrix using materials embraced by formula 2 which prevents shrinkage and the corresponding wavelength shift and the use of coupling agents to improve the adhesion of the organic components to inorganic materials, such as the sol-gel matrix is also known. These coupling agents have unsaturation in them (ie vinyl, acryl or methacryl moieties) and are embraced by formulae 1, 3 and 4 of the instant claims. These would inherently form a compound having a different refractive index from the unreacted coupling agent upon crosslinking and/or polymerization. **In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).** As the sol-gel compositions of the prior art are all solution coated, the arguments regarding that point seem to be incorrect. The applicant may have found improvements, beyond those obvious from the teachings of the references, but that is not clear at this juncture. The examiner also notes that allegations of refractive indices which are

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not supported by evidence are unpersuasive. The issue of pendant shape seems to refer to an unrecited feature.

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

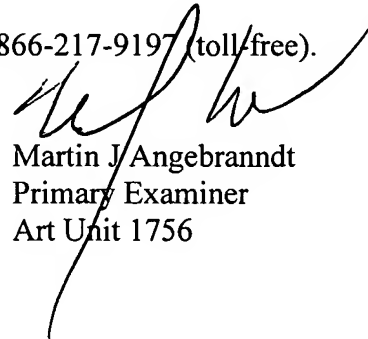
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).



Martin J. Angebrannndt
Primary Examiner
Art Unit 1756

12/27/2004